

Moderate Conservation Priority – Savannah Drainage Fringe Species

Whitetail Shiner *Cyprinella galactura*

Warpaint Shiner *Luxilus coccogenis*

Tennessee Shiner *Notropis leuciodus*

Mirror Shiner *Notropis spectrunculus*

River Chub *Nocomis micropogon*

Longnose Dace *Rhinichthys cataractae*

Banded Darter *Etheostoma zonale*

Florida Gar *Lepisosteus platyrhinchus*

Contributor: Jason Bettinger

DESCRIPTION

The upper Savannah River contains several fish species that are typically found in the Tennessee drainage, and not on the Atlantic slope. The presence of the whitetail shiner, the Tennessee shiner, the warpaint shiner, the mirror shiner, the longnose dace and the banded darter in the Savannah River of the southern Atlantic slope is likely due to a stream capture from the Tennessee River (Ross 1970). In South Carolina, these species occur only in the Chattooga and Seneca River systems of the upper Savannah River drainage.

Taxonomy and Basic Description

The whitetail shiner is a member of the cyprinid family (minnows) and belongs to the genus *Cyprinella*. Containing 29 species, *Cyprinella* is the second largest genus of American cyprinids after *Notropis* (Jenkins and Burkhead 1993).

Members of the genus *Cyprinella* are distinguished from other cyprinids by their large vertical diamond shaped scales and a black blotch in the dorsal fin (Rohde et al. 1994).

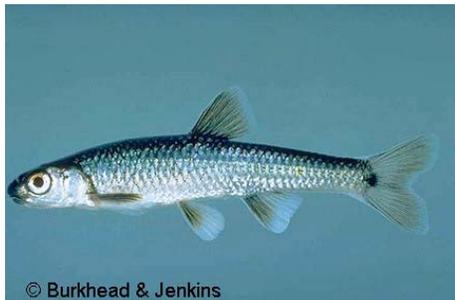
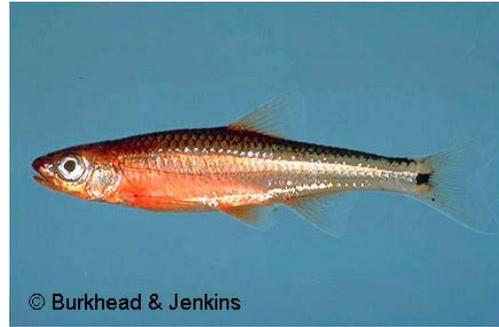
As with the other *Cyprinella*, the whitetail shiner is a crevice spawner (Jenkins and Burkhead 1993). Whitetail shiners have moderately deep and compressed bodies. Two large creamy white spots at the base of the caudal fin separate the whitetail shiner from other *Cyprinella* (Rohde et al. 1994). During the breeding season males often display a red tint to the dorsal fin. Adults range in size from 44 to 150 mm (1.7 to 5.9 inches) (Rohde et al. 1994).



The warpaint shiner is also a member of the cyprinid family (minnows). Fishes within the genus *Luxilus* are characterized by deep strongly compressed bodies and large lateral scales which are much higher than wide (Jenkins and Burkhead 1993; Rohde et al. 1994). Warpaint shiners range in length from 76 to 151 mm (3.0 to 5.9 inches). This attractive species displays a dark submarginal band in the dorsal and caudal fins and a prominent red slash on the opercle behind the eye.

Breeding males display red on the upper lip and snout (Rohde et al. 1994).

The Tennessee shiner is also a member of the cyprinid family (minnows) and belongs to the genus *Notropis*. With 71 species, *Notropis* is the second largest genus of freshwater fishes in North America (Rohde et al 1994). The Tennessee shiner is a slender fish with a prominent midlateral stripe and a lateral line set off by dashes terminating in a small rectangular spot at the base of the caudal fin. During the breeding season, the bodies and fins of males take on a red hue and they display a lime green stripe on their upper side. Adult Tennessee shiners range in length from 43 to 82 mm (1.7 to 3.2 inches) (Rohde et al. 1994).



The mirror shiner is also in the cyprinid family and a member of the genus *Notropis*. The mirror shiner is identified by its slender body, broad head, small subterminal mouth and upward-directed eyes (Rohde et al. 1994). During breeding season, the males of this otherwise bland fish display red-orange fins with white margins. Adults range in length from 43 to 75 mm (1.7 to 3 inches) (Rohde et al. 1994).

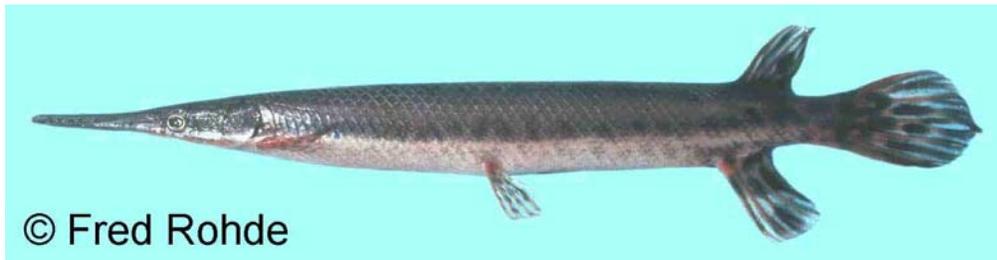
The river chub is a member of the genus *Nocomis*, which contains seven species, only two of these occur in South Carolina. River chubs range in size from 92 to 320 mm (3.6 to 12.6 inches). When breeding, the male displays a pink-blue head and lower body with red-orange fins (Rohde et al. 1994). Mature males develop a humped head and have breeding tubercles on the front of the snout. *Nocomis* species, including the river chub, are considered “keystone species” because other fishes are dependent on the behavior of *Nocomis* species for their own reproduction. During the breeding season, male river chubs build gravel nests by digging a depression in the substrate and then refilling the pit with a mound of suitable-sized gravel. Other fishes, including many shiner species, spawn on the nests constructed by *Nocomis* species (Etnier and Starnes 1993; Jenkins and Burkhead 1993; Rohde et al. 1994).



The longnose dace is a member of the large and diverse cyprinid family and resides in the genus *Rhinichthys*. There are nine species of *Rhinichthys*, two of which occur in South Carolina. The dace are slender minnows with elongate bodies, pointed snouts, fine scales and a small barbel in each corner of the mouth. *Rhinichthys* means “snout fish,” alluding to their prominent snouts (Jenkins and Burkhead 1993). The longnose dace has a long fleshy snout that extends well beyond the mouth.

Their body color is dark olive and the dorsal and caudal fins are often reddish in color. The longnose dace gets rather large for a minnow, reaching lengths of 160 mm (6.3 inches) (Rohde et al. 1994).

The banded darter is a member of the perch (*Percidae*) family and placed in the genus *Etheostoma*, which, containing approximately 115 species, is the largest genus of freshwater fishes in North America (Etnier and Starnes 1993). Darters are characterized by having two dorsal fins, relatively large pectoral fins and elongate bodies. Adult banded darters range in length from 54 to 78 mm (2.1 to 3.1 inches). The male banded darter has nine or more dark green bars that extend down onto the belly (Rohde et al. 1993). The first dorsal fin has a green edge over a red band. The pelvic and anal fins are also often colored with green highlights. Females and juveniles are typically drab with yellowish-tan bars.



The Florida gar is a member of the ancient family *Lepisosteidae*, a lineage of fishes that arose some 200 million

years ago (Wiley 1976). *Lepisosteidae* is a small family with only seven members, all of which are New World species (Rohde et al. 1994). Five of those species occur in North America. The gars are truly unmistakable with a heavy armor of diamond-shaped scales and long beak-like mouth equipped with needle-sharp conical teeth. The Florida gar can be distinguished from the longnose gar (*Lepisosteus osseus*), the only other gar occurring in South Carolina, by its broader and shorter snout. The Florida gar can attain lengths of 1320 mm (52 inches) (Page and Burr 1991).

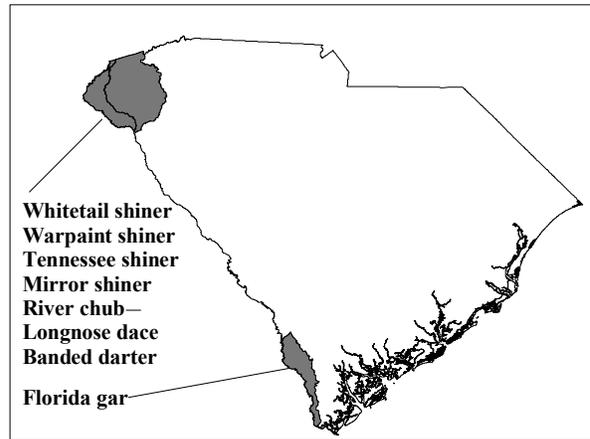
Status

The whitetail shiner, the warpaint shiner, the Tennessee shiner, the mirror shiner, the river chub, the longnose dace and the banded darter are all listed as species of special concern in South Carolina. Globally, all of these fish are considered to be stable and secure (Warren et al. 2000; NatureServe 2004). The mirror shiner is apparently secure, although uncommon, throughout some of its range (NatureServe 2004). The Florida gar is not listed in South Carolina and is considered to be secure globally (NatureServe 2004).

POPULATION DISTRIBUTION AND SIZE

Distribution

Within South Carolina, all species in this group except the Florida gar are restricted to the Chattooga and Seneca River system in the upper Savannah River drainage. The only known South Carolina population of Florida gar is located near Steel Creek in the lower Savannah River drainage (Doug Martin, personal communication). The Florida gar occurs throughout most of peninsular Florida and the Savannah and Ocklockonee River drainages in Georgia (Page and Burr 1991).



The whitetail shiner occurs east and west of the former Mississippi Embayment. It occurs in the Cumberland and Tennessee drainages of Virginia, Kentucky, North Carolina, Tennessee, Georgia, Alabama and Mississippi. It also occurs in the upper Savannah drainage in South Carolina and the upper Savannah and Santee drainages in North Carolina. West of the Mississippi River, the whitetail shiner occurs in the St. Frances and White River drainages of Missouri and Arkansas (Page and Burr 1991).

Outside of South Carolina, the warpaint shiner and the mirror shiner occur in the upper Tennessee River drainage of western Virginia, western North Carolina, eastern and southern Tennessee and northern Georgia. The warpaint shiner also occurs in northern Alabama. The Tennessee shiner occurs throughout most of the Tennessee drainage in Alabama, Georgia, Tennessee, North Carolina, Tennessee and Kentucky.

The river chub occurs in Atlantic drainages from the Susquehanna River in New York to the James River in Virginia; in the Great Lakes basin from New York to Michigan; in the Ohio River basin from New York to eastern Illinois and south to northern Georgia and Alabama. The river chub is also present in the upper Santee River in North Carolina and the upper Savannah River in South Carolina and Georgia (Page and Burr 1991).

The longnose dace occurs throughout most of the continental United States and Canada. The banded darter also has a wide distribution; it occurs in the Lake Michigan and Mississippi River basins from Minnesota to New York and south to northern Alabama and Georgia.

Population Size and Trend

Information on population size and status is limited for these species. From what is known about the upper Savannah River drainage, it appears that the whitetail shiner, the warpaint shiner, the mirror shiner, the Tennessee shiner, and the longnose dace can all be found in the Chattooga River. There have been no recent records of the banded darter or the river chub from either the Chattooga or Seneca River drainages. The banded darter may have been extirpated from the state, the last known collection occurred in 1986 (F. Rohde, pers. comm.). Outside of South

Carolina, all of these species, including the Florida gar, are considered to be stable and often common (NatureServe 2004).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

All four of these shiner species inhabit clear coolwater streams and rivers with moderate to high gradients (Jenkins and Burkhead 1993) and gravel and rubble substrates. The warpaint shiner and the mirror shiner are generally found in the slower moving areas associated with pools, slow runs and riffle margins. The whitetail shiner is common in deep pools near riffles and is often associated with large boulders and rocky banks (Mayden 1989). As with other *Cyprinella* species, the whitefin shiner is a crevice spawner, depositing eggs in crevices of logs and rocks and thus requires coarse substrates and instream structures such as logs to deposit its eggs (Rohde et al 1994). The Tennessee shiner inhabits the midwater areas of riffles, runs and pools adjacent to moderate and swift current (Jenkins and Burkhead 1993). The warpaint shiner and, to a lesser extent, the Tennessee shiner are dependent on chub nests (*Nocomis* spp.) for reproduction. The Tennessee shiner has also been observed spawning in shallow gravel runs without nests (Jenkins and Burkhead 1993).

The river chub is generally found in small to medium sized warmwater rivers with moderate to high gradient. This species occupies swift current and runs with gravel and boulder substrates. The longnose dace is found in high gradient streams and small rivers with substrates of sand, gravel or rock. This species has been found in very swift currents of two feet per second (0.6 meters per second) (Rohde et al. 1994).

Florida gar inhabits large rivers with low gradient, often occupying the sluggish pools and backwater areas with mud and sand substrates. Flooded bottomlands are important for reproduction of this species (NatureServe 2004).

CHALLENGES

Although all of these species are currently stable throughout the majority of their ranges, their limited distribution in South Carolina makes them vulnerable to imperilment within the state. Because of their limited distribution within South Carolina, they are especially vulnerable to development within the Chattooga River system. The major challenges to these species are deforestation, loss of riparian cover, siltation and impoundments.

CONSERVATION ACCOMPLISHMENTS

There are currently no conservation accomplishments known at this time for these species.

CONSERVATION RECOMMENDATIONS

- Determine statewide distribution and population status of the whitetail shiner, the warpaint shiner, the Tennessee shiner, the mirror shiner, the river chub, the longnose dace, the banded darter and the Florida gar with statewide stream surveys.

- Describe life history and habitat requirements of the whitetail shiner, the warpaint shiner, the Tennessee shiner, the mirror shiner, the river chub, the longnose dace, the banded darter and the Florida gar.
- Identify critical habitats and areas with healthy populations of the whitetail shiner, the warpaint shiner, the Tennessee shiner, the mirror shiner, the river chub, the longnose dace, the banded darter and the Florida gar. Protect these areas, once identified.
- Conduct targeted surveys of the Seneca River Basin to confirm the existence or extirpation of the whitetail shiner, the longnose dace and the banded darter. Surveys should be concentrated on the Toxoway River and the tributaries of Lake Jocassee. Protect these areas, once identified.
- Protect critical habitats from future development and further habitat degradation by following best management practices and protecting and purchasing riparian areas.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and other areas that contain available habitat.
- Encourage responsible landuse planning.
- Consider species needs when participating in the environmental permit review process.
- Develop a Non-Game Fishes of South Carolina poster and other educational materials in order to raise public awareness of nongame species and their ecological importance to the natural history of South Carolina's aquatic habitats.
- Educate motor vehicle operators of the negative affects of crossing streams at multiple locations and using stream bottoms as trails.

MEASURES OF SUCCESS

Determining the distribution, life history, habitat needs and southeastern population structure and trends would represent a measure of success for these species. Methods that protect water quality are also likely to protect most of these species. In the event that more protective BMPs are implemented, population studies of these fish could assist in determining the effectiveness of those measures.